PROVINCE OF ONTARIO

STATUS REPORT

FOR ACTIVITIES

RELATING TO THE RECOMMENDATIONS

OF THE

NIAGARA RIVER TOXICS

COMMITTEE REPORT

1986 - 1987

March, 1987

Ontario
Ministry of the Environment

The Honourable
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Minister

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ALSH

INTRODUCTION

In 1982, in response to mounting concern over toxic contamination of the Niagara River and Lake Ontario, a multi-agency committee was established by the Government environmental agencies whose jurisdictional responsibilities covered the Niagara River. This group, the Niagara River Toxics Committee, was comprised of representation from the Ontario Ministry of the Environment, New York State Department of Environmental Conservation, Environment Canada and the United States Environmental Protection Agency.

The agencies represented on the committee undertook to define the problems on the Niagara by developing a sound data base on which to design remedial activity. The results of these investigations were presented in the final report of the committee released in October of 1984. That report presented 24 specific recommendations to the member agencies.

The Niagara River Action Plan is a multi-faceted program developed by the Ontario Ministry of the Environment to address the concerns and recommendations presented in the final report of the Niagara River Toxics Committee. The Ministry's first action plan was presented in 1985. The plan detailed programs to be undertaken by the Ministry in 1985-1986. This document represents the first revision of this plan for the period 1986-1987. The activities discussed in this document will be integrated with programs and actions undertaken by other Canadian and U.S. jurisdictions involved in pollution abatement on the Niagara River.

Section A of this document outlines the direction of activities to be undertaken in 1986-87. These activities are based on responses to the recommendations of the NRTC Report which are described in Section B. Section C summarizes the status of discharges of pollution from sites in Ontario identified in the NRTC Report.

A. ONTARIO NIAGARA RIVER

ACTION PLAN

1986-87

A. ONTARIO NIAGARA RIVER ACTION PLAN, 1986 - 87

The central objective of the recommendations in the 1984 report of the Niagara River Toxics Committee is the virtual elimination of all toxic contaminant discharges and loadings to the Niagara River and to monitor the success of the efforts taken.

For the Province of Ontario, and specifically the Ministry of the Environment, acceptance of the report's recommendations means a commitment to work towards virtual eliminate of the discharge of toxic contaminants to the environment by the adoption of both new and enhanced initiatives.

In addition to commitment of funding for its regular programs, the Ontario Ministry of the Environment is expected to spend approximately $900,000 in fiscal year 1986/87 on programs which respond specifically to the Niagara River Toxic Committee Report. Of this expenditure, about $400,000 will be analytical expenses associated with enhanced point and non-point source, ambient and drinking water quality monitoring programs and about $500,000 will be spent for fully dedicated staff time, engineering, legal services and other consulting fees. These activities would be carried out and expenditures would be made to address environmental issues concerning the Niagara River.

The number of fully dedicated staff with the Ministry's Niagara River Improvement Project has increased to four full time staff. Staff has also been increased in the Ministry's District Office in Welland.

The following activities are to be undertaken in 1986-87:

A. Point Sources

1. Continue to monitor and evaluate contaminant inputs to the Niagara River Basin by using data collected during and since the publication of the NRTC Report for all Ontario point source discharges. Identify which discharges require further attention and abatement action.

   (Enhancement)

2. Where required, ensure that abatement programs and impending regulated monitoring programs are undertaken by industries and municipalities which discharge toxics and ensure continued compliance through subsequent monitoring audits.
   (Ongoing)

3. After the above evaluations, refine sampling programs and protocols to be discharge-specific.

   (Enhancement)

4. Continue and expand intensive point source monitoring programs in 1986/87 to better define parameters and concentrations. Implement or modify self-monitoring program.

   (Enhancement)

5. In consultation with United States environmental agencies, evaluate toxic waste loading from New York discharges to the Niagara River by continuing to review State Pollution Discharge Elimination System (SPDES) permits and act to ensure stringent discharge limits under the terms of the Clean Water Act.

   (Ongoing)

6. Review discharge monitoring reports (DMRs) submitted by SPDES permit holders to New York State Department of Environmental Conservation (DEC). Evaluate permit compliance and act, where necessary, to ensure compliance with relevant legislation.

   (Ongoing but enhanced)

7. In conjunction with the Ministry's Municipal and Industrial Strategy for Abatement Program (MISA) announced in June, 1986, establish regulations for Ontario dischargers governing reporting requirements and monitoring schedules/programs of industries/ municipalities. Review submissions and enforce compliance where necessary.

   (Enhancement)

   Costs for "A": Analytical Services - $300,000
   Professional Time & Services - $210,000

B. <u>Non-Point Source (Landfills)</u>

1. Finalize environmental impact evaluations of Ontario landfill sites and continue to monitor test wells. Develop follow-up actions where needed.

   (Ongoing)

2. Monitor remedial activities and investigations at landfills deemed to pose a threat to the environmental quality of the Niagara River.

   (Ongoing but enhanced)

3. Re-evaluate effectiveness of pollution abatement activities at landfills as monitoring results are reviewed.

   (Ongoing but enhanced)

4. Review, in detail, investigative studies and remediation proposals at major hazardous waste landfills on the New York side of the Niagara. Submit Ontario's position on these activities. When necessary, participate in administrative hearings.

   (Ongoing)

5. Continue to investigate and assess active and abandoned hazardous waste disposal sites that potentially contribute significant contamination to the Niagara River.

   (Ongoing)

6. When necessary, take appropriate actions, where remedial proposals for toxic waste site remediation proposals are deemed unacceptable to Ontario.

   (Ongoing)

   Costs for "B": Analytical Services - $50,000
   Professional Time & Services - $175,000

C. Long Term Monitoring

1. In cooperation with other relevant jurisdictions, monitor river water and suspended sediment inflow at Lake Erie and downstream at Niagara-on-the-Lake on Lake Ontario.

   (Ongoing)

2. Continue contaminants monitoring and sport fish program.

   (Ongoing)

3. Continue biomonitoring programs for spottail shiners, cladophora and clams. Establish background water quality stations and continue existing biomonitoring locations.

   (Ongoing but enhanced).

4. Continue monthly monitoring of raw and treated drinking water at Fort Erie, Niagara Falls (Ontario) and St. Catharines and of river water at Niagara-on-the-Lake. (The new Drinking Water Surveillance Program incorporates the majority of this special monitoring).

   (Ongoing but enhanced)

   Costs for "C": Analytical - $150,000
   Professional - $ 75,000

D. Waste Reduction, Pre-treatment and Good Housekeeping

1. Work with municipalities to adopt stringent sewer use by-laws and recommend pre-treatment where necessary and set a timetable for implementation.

   (Ongoing but enhanced)

2. Through education and seminars, promote industrial waste reduction/elimination programs by co-operation with Municipal/Regional Governments, Chambers of Commerce and industries.

   (Enhancement, no costs assigned)

3. Continue to emphasize good housekeeping by industries and municipalities.

(Ongoing)

4. Ensure the implementation of Regulation 309 which outlines the responsibilities of generators, carriers and receivers of liquid, industrial and/or hazardous waste in a cradle-to-grave chain of responsibility.

(New program)

5. Commence the implementation of the Ministry's Municipal/Industrial Strategy for Abatement (MISA), which provides discharge effluent requirements for industrial pre-treatment on indirect discharges as well as controls on direct discharges from industrial and municipal sources based on technology and/or water quality criteria, whichever is the more stringent.

(New program)

Costs for "D" are in existing budgets exclusive of those specifically allocated to Niagara River programs.

E. Analytical Data on Water Chemistry

1. Ministry Laboratory staff will be requested to develop Quality Assurance, Quality Control (QA/QC) protocols and methodologies for organics where a need has been identified.

2. Priorities and laboratory organization restructured to place needed emphasis on toxic organics.

3. GC/MS analytical equipment has been acquired which is capable of routinely analyzing those compounds of concern identified in the NRTC Report.

4. MOE is working with other agencies on guidelines and standards where none are presently available.

5. Data storage system continually being revised and improved.

6. Support interagency enhancement of data storage and access.

(Ongoing Ministry programs)

Costs for E1 to E6 in existing programs.

7. Maintain program to share analytical samples with U.S. authorities when invited to do a comparative analysis relating to a problem site or a contaminated discharge to the Niagara River.
(Ongoing program since 1982).

Cost for E7: $58,000

B. PROVINCE OF ONTARIO

RESPONSES TO THE NIAGARA RIVER TOXICS COMMITTEE REPORT

(Revised September, 1986)

Recommendation	Current Situation	Proposed Future Action
Recommendation #1 NY State - Revise permits to eliminate exceedances which could occur from cumulative effects of permitted discharges.	Not applicable, U.S. issue.	Not applicable, U.S. issue.
Recommendation #2 Assess need for:		
A) Pre-treatment of industrial discharges to sanitary sewers.	A) Industrial waste discharges to sanitary sewers are controlled by the Regional Municipality of Niagara through sewer use by-law. Ministry is urging pre-treatment of industrial waste discharges.	A) A timetable has been set for industrial compliance in Niagara Falls; Regional timetables are underway. A committee has been established by MOE to upgrade the model sewer use by-law and the revisions are underway.
B) Secondary treatment at two sewage treatment plants (STPs).	B) Most major plants on IJC Waters have secondary treatment and, along with industries, are being monitored for conventional parameters and reported to the International Joint Commission. The Niagara Falls plant secondary treatment facility upgrading was completed Sept. 3, 1985.	B) Negotiations are underway among the Regional, Provincial, and Federal governments to upgrade to secondary treatment the last remaining primary plant on the Niagara River, at Fort Erie (Anger Ave.). Included are plans for (a) sewer separation to prevent overflow and (b) shut down of Crystal Beach plant.

*Recommendations are compressed. For full text of recommendations, see NRTC report.

Recommendation	Current Situation	Proposed Future Action
C) Establishing flexible monitoring program under Certificates of Approval.	C) Waste loadings and concentrations for conventional parameters are included on new and updated Certificates of Approval for sewage plants and include the type of monitoring that is necessary to determine compliance. Similar requirements are placed on industrial discharge Certificates of Approval for special cases.	C) Increase surveillance of municipal and industrial point sources to ensure compliance with MOE requirements. Include loadings and concentrations for additional parameters on industrial and municipal Certificates of Approval. Require emitters to expand their monitoring programs. Institute initial phases of Municipal-Industrial Strategy for Abatement (MISA) by October, 1986. Develop extensive self-monitoring regulation on an industrial sector basis to be implemented Province-wide.
Recommendation #3 Where needed, industries and individuals should adopt good housekeeping practices to prevent the discharge of priority pollutants.	Normally industries practice good housekeeping to reduce cost of treatment. MOE has greatly expanded its Investigations & Enforcement Branch. Investigators are now located in Welland District office to investigate pollution incidents in the Niagara Peninsula and to undertake enforcement actions, including litigation.	Industries will be encouraged to tighten-up inplant control. Industries which pollute as a result of poor housekeeping practices will be prosecuted. Regulations are being considered for requirements for a Best Management Practices Plan (BMP) by industrial sector, (i.e. spill and leak control, stormwater management, storage and handling, etc.

Recommendation	Current Situation	Proposed Future Action
Recommendation #4 Point-source self-monitoring programs should include a Quality Control (QC) program and a lab certification process.	MOE lab is reviewing Quality Assurance, Quality Control (QA/QC) procedures for organics to develop guidelines. See also Recommendation #20.	Review industries presently doing self-monitoring and evaluate parameters monitored. MOE Lab will have QA/QC guidelines. Data validation procedures will be available upon request from MOE. MOE laboratory will establish a Laboratory QA office to oversee QA/QC protocols.
Recommendation #5 Restore Niagara Falls New York Wastewater Treatment Plant and carbon filters and bring into design capacity operation as soon as possible.	Not applicable, U.S. issue.	Not applicable, U.S. issue.
Recommendation #6 Once a problem (landfill) site has been identified, the fastest means of effecting cleanup should be adopted.	The waste management sites identified in NRTC Report are being assessed for environmental impacts. One site (Cyanamid Niagara Falls) is under control of Abatement staff, site owner (Ontario Hydro) and Cyanamid are required to submit an acceptable remedial program to MOE. Negotiations are underway.	Abatement Staff have begun an accelerated remedial program to clean up the problem sites identified in the NRTC Report and deal with any new problems identified. Work to be completed by the end of 1986.

Recommendation	Current Situation	Proposed Future Action
Recommendation #7 U.S. investigate landfill sites beyond 3 mile limit of Niagara River to include all of drainage basin.	Not applicable.	Not applicable.
Recommendation #8 Landfill site priorities must consider long-term low level effects on Lake Ontario in addition to effects in immediate landfill area.	Investigate impacts from non-point landfill sources.	Increase monitoring and remedial actions on problem sites that may contribute to low-level contamination.
Recommendation #9 A detailed site and area investigation program should be carried out and remedial action where needed should be taken.	The Waste Management Regulation is being revised to tighten up on waste site operation/design. Two of four preliminary hydrogeological investigations have been completed. One site (Atlas Steels Landfill) has been removed from the significant list; the second site (Cyanamid, Niagara Falls) has been referred to Abatement staff for remediation. A third site (Fort Erie Landfill) has been evaluated and a draft report submitted to MOE. The fourth site (Cyanamid, Welland) is under investigation as a result of litigation in 1984.	Abatement staff will have all sites upgraded to meet the new Regulatory Requirements. Niagara Team will complete investigation programs on four sites under MOE jurisdiction by end of 1986.

Recommendation	Current Situation	Proposed Future Action
Recommendation #10 Site confinement and containment of hazardous toxic substances requiring perpetual leachate removal should not be considered as a final answer to existing and future sites and therefore innovative and more effective techniques should be developed (recycling, phasing out toxics, incineration, chemical fixation, etc.).	Ontario Waste Management Corporation is conducting a detailed investigation of a site near Wellandport in the Welland River Basin for construction and operation of a hazardous and toxic waste management facility. The Ministry of the Environment is developing new legislation, policies and guidelines intended to comply with the Blueprint on Waste Management. MOE has recently passed regulations for proponents of PCB destruction technology including class 1 mobile incinerators and class 2 chemical destruction systems.	Ministry's Regional staff will proceed with implementing the recommendations put forward in the Blueprint on Waste Management. The installation of waste management facilities proposed by OWMC, will receive a full evaluation by the Ministry of the Environment as well as a public hearing.
Recommendation #11 More data on river sediment locations and analysis is needed. A map to show this should be produced and remedial programs evaluated.	Initial sediment studies to be completed by April, 1987. Sampling completed and analysis underway of fish and sediments in Hydro Reservoir.	Plan co-operative program with N.Y. State. - Report to be finalized by April, 1987.

Recommendation	Current Situation	Proposed Future Action
Recommendation #12 Additional analyses for chlorinated organics needed in water and sediments, Fort Erie and Chippawa Channel (DDT and chlorinated benzenes).	Draft consultant's report on 1983 Benthic Study submitted to MOE; sediment chemistry data being evaluated. Chlorinated organics sampled monthly in raw water at Fort Erie.	- Final report by end of 1986. - Identify exact location of concern. - Increased monitoring.
Recommendation #13 Reduce inputs of toxics into upstream basins as called for by Great Lakes Water Quality (GLWQ) Agreement of 1978.	The control of inputs of toxic materials is part of the normal abatement program.	Increased use of Control Orders and approval mechanisms under existing and developing legislation to reduce point source discharges. MISA program will lead to regulation and control.
Recommendation #14 Carry out abatement where cause and effect of contamination has been demonstrated and then monitor to show the effects of abatement, (areas identified at present are on US side).	No sites are identified in Ontario where monitoring has shown the cause and effect relationship of contaminated discharges on ambient conditions.	If found in Ontario, abatement action will be taken.
Recommendation #15 Consider monitoring Group 1 chemicals at point sources.	On a priority basis the more sensitive and suspected areas adjacent to complex industrial operations are monitored for toxic pollutants.	Under the development and implementation of new regulations, toxic organic and inorganic chemicals will be included in an extensive list of chemicals monitored on a sector-based program Province-wide. Regulations now in development stage.

Recommendation	Current Situation	Proposed Future Action
Recommendation #16 Review chemicals in Group I and II and consider including in ambient monitoring.	Of the 139 chemicals in NRTC Report's Groups I, IIA-G, about half are tested routinely.	Remaining chemicals of concern are now under review with regard to implementation to routine analytical methodologics. - water-parameter list presently under review - biota-no changes from preliminary list
Recommendation #17 Where chemicals found qualitatively should consider quantitative analyses.	Quantitative or semi-quantitative data provided for chemicals of concern; qualitative data provided for other chemicals.	Reviewing list of chemicals of concern and need for determining guidelines. For those chemicals with guidelines, quantitative analytical methods will be available.
Recommendation #18 Characteristics data should be obtained or developed for the chemicals for which there are no data - chemicals which may have originated as process by-products.	Grants given to institutions and to individual companies to undertake environmental effects studies, funding arranged through MOE's Research Advisory Committee (RAC).	New emphasis on identifying potentially hazardous by-product chemicals.
Recommendation #19 Environmental and human health criteria should be established for the many chemicals for which no criteria exist, especially where a water body is shared.	MOE participates with federal as well as provincial working groups in developing environmental criteria for chemicals in water.	- Consider all new recommended limits from other jurisdictions and evaluate for validity. - Continue own research as well as participating with inter-jurisdictional working groups.

Recommendation	Current Situation	Proposed Future Action
Recommendation #20 Monitoring programs need quality assurance - laboratory and methodology conformity - Data limitation should be recognized.	Monitoring programs between U.S. and Canada vary greatly in detection limits and parameters. IJC is considering some facets of QA/QC which relate to boundary waters studies and monitoring. In preparation for proposed Province-wide monitoring regulation, industrial sectors are being reviewed and the parameters already monitored are being evaluated. MOE lab is detailing QA/QC procedures for organic analysis. To some extent, MOE contracts to outside laboratories contain detailed QA/QC validation procedures.	The Province-wide regulation for industrial self-monitoring currently being developed on an industrial sector basis will detail QA/QC procedures and will empower the MOE Laboratory QA office to carry out selective audits of sampling and analytical systems. MOE will assign the responsibility for developing and implementing policies in this area to the MOE Laboratory QA office.
Recommendation #21 All data should be on a central data system for U.S. and Canada boundary waters.	MOE Niagara Team has purchased an IBM PCAT micro-computer for data storage and analysis and for use in networking with other agencies. (Identical machine to that recently purchased by EPS-Ontario Region (Environment Canada).	MOE is working on compatible systems for data sharing. Telecommunications to the IBM in 1986. Accessible data base to other agencies will be Lotus 1-2-3 release 2 via IBM DOS. Anticipated 300, 1200, 2400 Baud.

Recommendation	Current Situation	Proposed Future Action
Recommendation #22 A Bi-National Committee be set up to co-ordinate implementation of recommendations.	The four jurisdictions are discussing the establishment of a co-ordinating bodies to oversee the implementation of a toxics management plan for the Niagara River.	Establish four-jurisdiction secretariat and monitoring committee.
Recommendation #23 Develop toxic waste load allocation plan for the Niagara River based on mass balance concept.	U.S. agencies have expressed an interest in the evaluation of other inputs of toxics into Lake Ontario. Niagara River could become pilot project.	Initiate mass balance estimates from ambient river sampling program with sampling at Fort Erie and Niagara-on-the-Lake.
Recommendation #24 Update GLWQ Agreement to include chemicals of concern and make objectives more stringent and eventually to approach the zero discharge philosophy.	Ontario supports the principle of virtual elimination of toxic substances as stated in the white paper (MISA document June 1986).	Implement white paper (MISA) through regulations. Establish ambient water quality objectives for more toxic substances.

C. STATUS SUMMARY OF ONTARIO SITES AND DISCHARGES IDENTIFIED BY THE NIAGARA RIVER TOXICS COMMITTEE REPORT (December 1986)

December, 1986

ATLAS STEEL LANDFILL SITE

BACKGROUND:

- The landfill is adjacent to the Welland River and has been used by the company since the mid-1930's.

- The main wastes disposed are slag, electric arc furnace baghouse dust and wastewater treatment plant sludges which contain various metallic oxides and chromate.

- Until 1983, spent pickle acid was disposed at site and the lime content of the surrounding slag was assumed to neutralize the acids.

- Monitoring of surface water run-off in 1982 detected metals near effluent guidelines as follows: Cadmium 0.045 mg/l, Nickel 12 mg/l, Lead 0.20 mg/l and Zinc 0.690 mg/l.

STATUS:

- The site is certified by the Ministry to receive 40,500 tonnes per year of 100% non-hazardous industrial waste.

- As part of the Ministry Control Order a waste acid solidification plant has been built to treat spent pickle acid. Operation started in 1984. The company has removed all ponded acids from the landfill to this plant for treatment. Stabilization of the residual sludge layer was completed in October, 1985.

- The Ministry funded a preliminary hydrogeological investigation to describe impacts to surface and groundwater. The hydrogeological study report was released by MOE in December, 1985.

- The study concentrated on the near surface fractured clay but did include one deep test well for assurance that the bedrock aquifer is protected. The study concluded that no groundwater contamination was occurring and the offsite contaminant migration was restricted to surface runoff.

- The company will continue monthly routine sampling to ensure that surface runoff improves with removal of the acid source. Heavy metals are now expected to remain bound in the highly alkaline slag.

- 1985 monitoring (after closure of the acid pit and start-up of acid solidification plant) of surface water runoff at the same location as above showed the following levels: Cadmium 0.004 mg/l, Nickel ND, Lead ND and Zinc ND.

ND = Not Detected

December, 1986

CYANAMID, WELLAND LANDFILL

This landfill was identified by the NRTC as having significant potential to introduce contaminants to the Niagara River.

BACKGROUND:

- Cyanamid operates two licenced disposal sites on their Welland plant property:
  - West Dump Site - 3 hectare site is approved to receive 1000 tonnes per year of 100% non-hazardous waste.
  - Brown Road Dump - Approved to receive 1,800 tonnes per year of 100% non-hazardous waste.
- In addition, 97 hectares of settling lagoons (cells) were approved under the Ontario Water Resources Act. Ten of 11 cells are now closed and capped while the waste (primarily calcium oxide) is placed as a slurry in the active bermed cell.
- Preliminary hydrogeological investigations completed in December 1981 identified that:
  - Groundwater quality in bedrock is unaffected, being protected by vast clay deposits in the overburden.
  - Some elevated levels of sulphate and hardness appear in surface water discharge (decant water); these are not considered a threat to the environment.
- The Ministry monitors shallow groundwater and Thompson Creek.
- These sites were listed in the NRTC report due to concern for waste contaminants entering Thompson Creek (which flows to the Niagara River) and the shallow groundwater system.
- Some elevated nitrate levels (26.4 mg/l) have been noted in near-surface groundwater in fractured clay adjacent to the cells.
- In 1983, Cyanamid modified drainage to contain on site seepages.
- In 1984, following investigations by the Ministries of Environment and Labour, Cyanamid pleaded guilty to charges of operating a waste disposal site without a Certificate of Approval (Section 39) and was fined $7,510.

STATUS:

- As a result of the litigation, Cyanamid agreed to hire a consultant to extensively investigate the entire Welland plant site hydrology and hydrogeology.
- First phase of this program was completed in December, 1984. It established the groundwater flow system and determined the monitoring program for Phase 2 which was undertaken in 1985 and the final report is expected early in 1987.
- Study may form the basis of a remedial action plan.

December, 1986

CYANAMID, NIAGARA FALLS/ONTARIO HYDRO WASTE SITE

This waste storage area owned by Ontario Hydro was used by Cyanamid for the storage of cyanide-bearing wastes. It was identified as having a significant potential to contaminate surface waters.

BACKGROUND:

- Wastes were stored on the ground at this property, owned by Ontario Hydro, while the Queenston-Chippawa Canal was being built, interrupting the access to Cyanamid's St. David site.

- At Ontario Hydro's request, approximately 32,000 tonnes of the material were removed to Cyanamid's Welland plant site in 1974.

- In 1982 the site was investigated as part of NRTC studies of landfill sites and identified as having a significant potential for contaminant migration. This site was listed in the NRTC report based on consideration of the type of waste stored on site, which could potentially generate leachate containing cyanide and because of the site's proximity to the power canal and Gorge.

- Although some waste was removed, the investigation identified more waste material to be in topographic depressions on the site.

- Other waste stored on site included carbon, slaked lime, calcium carbide, lime, coal, coke and calcium oxide.

STATUS:

- Because wastes of concern were identified at the site, the Ministry commissioned a hydrogeological study. The final report was made public in February, 1986.

- The study:
  - examined the spatial extent of the waste;
  - identified the potential for groundwater and surface water contamination;
  - concluded that significant cyanide-bearing wastes still remained on site and that a potential existed for leachate to migrate to the Niagara River.

- As a result of the report, MOE's Abatement Section took action by notifying Ontario Hydro and Cyanamid and requiring the preparation of an acceptable action plan for remediating the site.

- Ontario Hydro and Cyanamid submitted a joint action plan for the site which was accepted by the Ministry. Phase I has been completed and the Ministry has reviewed the draft report which outlined additional areas of waste not previously identified.

- Drilling of test wells for Phase II of the waste site evaluation studies has commenced. These studies will examine potential pathways for cyanide migration from all areas of waste. A Phase II report is expected during 1987 and remedial action considered.

December, 1986

FORT ERIE MUNICIPAL LANDFILL SITE

This municipal landfill was identified by the NRTC as having a significant potential for contaminant migration.

BACKGROUND:

-The Ministry has approved the use of 16.2 hectares of a total area of 38.4 hectares for use as a municipal landfill, 4 hectares of the approved area was unused at the time of the NRTC report.

-The original application for disposal included provision for 2% toxic waste but no hazardous waste has been deposited at this site.

-Phase I hydrogeological investigations were completed in December 1981 and based on conventional parameters, identified leachate impact in the shallow bedrock and in surface seeps discharging off-site to the north.

-The Ministry identified the site as having significant potential for contaminant migration (not including hazardous contaminants) based on the above identification of apparent leachate migration.

-The Town of Fort Erie expropriated the adjacent 25 hectares to the north to provide a zone of degradation (buffer zone).

STATUS:

-Surface drainage has been controlled through site modifications which included the construction of a leachate collection pond.

-A Phase 2 hydrogeological investigation completed in August 1983 was carried out to define the extent of bedrock contamination using 12 bedrock wells. It concluded that "Leachate is assimilated close to the landfill in the bedrock aquifer" within the buffer zone and that there is no potential for impact to local wells.

-Only one monitoring well immediately adjacent to the waste landfill is confirmed to have leachate contamination.

-Chemical analysis indicates elevated levels of conventional chemical parameters.

-Sewage sludge drying lagoons on the landfill are suspected of contributing to contamination and were planned for phase-out.

-A more comprehensive groundwater sampling and analysis program was carried out during the winter of 1985-86 and no apparent problems were reported by the Town's consultant.

-An area waste management scheme is proposed, which, if implemented, will result in the landfill being closed.

-The Ministry, the Town and their consultants have met to discuss the Phase III studies at this site. The Phase III draft report is due out shortly.

December, 1986

CN RAIL, NIAGARA FALLS YARD

This landfill site was identified in the NRTC report as having a significant potential for contaminant migration.

BACKGROUND:

- This site belongs to CN Rail and being Federal Crown land, is the environmental responsibility of Environment Canada.

- It is a seven hectare site which was operated between 1962-1978 for the disposal of construction and domestic waste, scrap metal clean out waste from rail cars and some oil and machine shop waste.

- It was closed due to problems with fire and was subsequently covered with waste rock.

- Intermittent surface drainage is iron-stained and exhibits elevated conductivity.

- A 1983 study by Environment Canada concluded that:
  - Only a small fraction of the waste (i.e. oil film on metal filings) was of medium concern.
  - There was a potential for impact due to the proximity to recreational and residential lands.
  - The site was close to the Whirlpool where "Pacific Salmon and Rainbow Trout congregate during fall migration".
  - The site was rated as "priority 2", i.e. to be assessed in the future rather than immediately as in priority 1.

- Chemical analysis by MOE of surface runoff sampled in December, 1982 indicated copper, nickel and lead were marginally over Ontario water quality objectives; there were no pesticides or volatile organics.

STATUS:

- The Federal Government has engaged a consultant and a site evaluation has been carried out.

- The Ministry's data has been sent to CNR.

- CNR has presented a confidential hydrogeological report on this site to Environment Canada and based on results of tests on the monitoring well, the Federal Government has concluded that the site does not present a problem.

- The Federal Government has proposed that site closure should follow federal guidelines including a 1 metre thick clay cap.

- The Ministry will monitor activities at this site and prompt Environment Canada to speed up the capping process and site closure.

December, 1986

CYANAMID, WELLAND PLANT

This facility was identified by the NRTC to exceed cutoff levels for heavy metals and cyanide.

BACKGROUND:

- Cyanamid manufactures primarily nitrogenous fertilizers at this location.
- An extensive MOE Section 126 survey resulted in a Control Order issued in 1977. An amendment to the Order was issued September 30, 1984 allowing an additional six months to reduce toxicity and achieve effluent quality, specifically identifying ammonia as a concern.
- At the time of the NRTC report, this facility was identified as the source of 9.9 kg/d heavy metals (primarily chromium) and 2.3 kg/d cyanide.

STATUS:

- Abatement measures installed under the Control Order include chromium removal, ion exchange neutralization units, scrubbers, filtration units and a containment system.
- The major direct discharge from this plant to the Welland River has been eliminated. Process streams have been redirected to the on-site wastewater treatment system.
- Cyanamid has also eliminated a cooling water discharge which was a source of chromium.

December, 1986

FLEET INDUSTRIES

Effluent from this plant was found to exceed the NRTC cutoff levels for heavy metals.

BACKGROUND:

- Fleet Industries (Division of Ronyx) manufactures various airplane and sonar components.
- At the time of the NRTC report, the discharge from this facility contained 1.08 kg/d of chromium at a reported flow rate of 910 m^3/d.
- A plant expansion in 1981 included a physical chemical wastewater facility for treatment of metal preparation acid solutions.
- Two individual plant effluents discharge to Frenchman's Creek. One discharge is from the wastewater treatment plant, while the other contains several streams which include process wastewaters, pre-treated sanitary effluent, water from spray painting booths, non-contact cooling water, roof drains and plant site runoff water.
- A 1982 MOE Abatement survey resulted in relocation of the old metal preparation area closer to the existing effluent treatment facility.

STATUS:

- A voluntary program to treat remaining effluent sources in an expanded treatment facility has been implemented.
- Additional data is now being obtained to assess the degree of abatement of effluent contamination.
- Over the past three years Fleet has undergone rapid expansion to approximately double its size since the time of the NRTC studies.
- Fleet has connected all process and sanitary effluents to the municipal sewer system as of September. However, the non-contact cooling water, roof drains and plant site runoff still discharge to Frenchman's Creek.
- Further sampling will ascertain what level of contaminant reduction has been achieved through these modifications.
- The quality of non-contact cooling water will be checked during 1987 to ensure it does not contain contaminants.

December, 1986

WELLAND WATER POLLUTION CONTROL PLANT

The Water Pollution Control Plant for the City of Welland was found to exceed the NRTC cutoff levels for heavy metals.

BACKGROUND:

- This facility is a secondary (conventional activated sludge) treatment plant with phosphorus removal, completed in 1972 with a rated capacity of 45,500 m^3/d (10 MIGD).

- At the time of the NRTC report, it was identified as a source of heavy metals at 17.1 kg/d, predominately lead at 13 kg/d with a daily average flow of 30,038 m^3/d (6.6 MIGD).

- This plant discharges effluent to the Niagara River via the Welland River and the Queenston-Chippawa Power Canal.

- In 1983, an expansion of the secondary clarification section and a second chlorine contact chamber at this plant expanded the secondary treatment section to 69,160 m^3/d.

STATUS:

- An application by the Regional Municipality of Niagara to re-rate the plant to 15.2 MIGD was turned down and the Region has commissioned a full-scale study of plant expansion.

- An application has been resubmitted to the Ministry for an expansion to 15 MIGD with provision of nitrification. The application is under review.

- The Ministry and the Region will continue routine inspection and monitoring.

- Following the NRTC report, lead levels decreased and have remained below the NRTC cutoff level.

- A consultant for Environment Canada and Ministry of the Environment has conducted an extensive nine day study to ascertain organic and heavy metal removals across the plant. This data will complement the Ministry's 1986 Niagara River point source sampling program.

December, 1986

NIAGARA FALLS (STAMFORD) WATER POLLUTION CONTROL PLANT

The Niagara Falls, Ontario Water Pollution Control Plant (WPCP) was determined to be in excess of the NRTC cutoff levels for total organics, heavy metals and cyanide.

BACKGROUND:

- This plant was a primary plant with phosphorous removal with a design flow of 58,200 m^3/d (12.8 MIGD) in 1981 and 1982.
- At the time of the NRTC report, this WPCP was identified as a source of total organics (6.1 kg/d), heavy metals (16.4 kg/d) and cyanide (0.34 kg/d) at a daily average flow of 45,760 m^3/d.
- Other EPA priority pollutants were detected below NRTC cutoff levels and are not included in these effluent loadings.
- Effluent is discharged to the Niagara River via the Queenston-Chippawa Power Canal.

STATUS:

- This plant has been upgraded to a secondary treatment facility through the addition of a 68,200 m^3/d (15 MIGD) secondary treatment process (rotating biological contactors) in August 1985.
- Since installation of the RBC process, the following reductions in conventional pollutants over 1981/82 levels has been recorded: BOD_5 60%, Suspended Solids 61%, Total Phosphorous 76% and Ammonia 39%.
- The Region of Niagara has established an industrial pre-treatment strategy for the City of Niagara Falls for implementation by 1990.
- Ministry monitoring carried out late in 1986 will ascertain the impact of the secondary treatment process on priority pollutant loadings.

December, 1986

TOWN OF FORT ERIE (ANGER AVE.) WATER POLLUTION CONTROL PLANT

The Anger Avenue Water Pollution Control Plant was determined to exceed NRTC cutoff levels for total organics and heavy metals.

BACKGROUND:

- This plant was constructed in 1964 as a 4,500 m^3/d (1 MIGD) facility and expanded in 1979 to 15,015 m^3/d (3.3 MIGD).
- It provides primary treatment with phosphorus removal and chlorination.
- The effluent is discharged via a submerged outfall to the Niagara River.
- At the time of the NRTC report, this facility was identified as a source of total organics (4.13 kg/d) and heavy metals (1.8 kg/d) at a daily average flow rate of 16,000 m^3/d.

STATUS:

- The Region of Niagara plans to expand the plant by 1990 and has engaged a consultant to conduct an engineering feasibility study on expansion of the plant capacity and addition of secondary treatment.
- Negotiations are underway among the Region of Niagara, the Federal and Provincial governments for expansion of the plant to secondary treatment, separation of sewers to prevent hydraulic overloading and overflow to the Niagara River, as well as possible diversion of the Crystal Beach area to the Anger Avenue plant, leading to phase-out of the overloaded Crystal Beach plant.
- An industrial pre-treatment program strategy for the Town of Fort Erie has been established by the Region of Niagara for implementation by 1990.

December, 1986

CITY OF WELLAND

The McMaster Avenue combined sewer was identified by the NRTC to exceed cutoff levels of total organics and heavy metals.

BACKGROUND:

- This is the only remaining combined sewer on the Ontario side of the Niagara River.
- The City of Welland owns and maintains the sewer.
- At the time of the NRTC report, this combined sewer was identified as the source of total organics (0.5 kg/d) and heavy metals (12.8 kg/d).
- An estimated 2 to 6 MIGD of untreated combined sewage discharges daily to the Welland River from this source, consisting mostly of industrial process water and cooling water.
- A voluntary industrial sewer separation program was undertaken and is continuing.

STATUS:

- The City of Welland has installed a separate sewer parallel to the McMaster Avenue sewer for diversion of uncontaminated cooling water streams.
- Industries connected to the McMaster Avenue sewer are undertaking individual sewer separation programs at the Ministry's and City's request.
- The Ministry has requested from the City an abatement program for this source.
- Since the NRTC Report, one of the major industrial contributors to this sewer (Wabasso) has ceased operation.
- The Ministry is surveying industries connected to this sewer to update effluent quality and quantity information as well as sampling the sewer outfall to the river.
- Information gathered in these studies will support the Ministry in requiring the City to connect this sewer to the Welland WPCP.
- An Order is under development.

December, 1986

CYANAMID, NIAGARA PLANT

This facility was determined to exceed the NRTC cutoff levels for total organics, heavy metals and cyanide.

BACKGROUND:

- Cyanamid makes calcium carbide, calcium cyanide, calcium cyanamide and liquid nitrogen at this facility.
- The NRTC report identified the following compounds in excess of cutoff levels:

  Butylbenzyl Phthalate (0.35 kg/d)
  Di-iso-octyl Phthalate (0.35 kg/d)
  Zinc (0.6 kg/d)
  Cyanide (0.96 kg/d)

- The processes at this facility do not involve process wastewater, only cooling water is discharged. Leakage to cooling water may occur due to the age of this facility.

STATUS:

- The company has made process changes to eliminate zinc and to reduce contact of cyanide by cooling waters.
- The company is required to monitor for cyanide on a monthly basis.
- Neither the Ministry's Abatement section nor the company can determine a source of the phthalates (plasticizers) found by NRTC.

December, 1986

ATLAS STEEL

Atlas was identified as one of the ten most significant point source discharges of total EPA priority pollutants to the Niagara River. This plant exceeded NRTC cutoff levels for heavy metals and total organics.

BACKGROUND:

- This facility makes specialty and stainless steel in electric arc furnaces.
- At the time of the NRTC report, Atlas was identified as the largest Ontario source of total EPA priority pollutants on the Niagara River at 74 kg/d.
- Heavy metals were the predominant factor in this loading at 70.2 kg/d, and the most significant contributors to this loading were chromium (30 kg/d) and nickel (30 kg/d).
- Two organics, Di-n-butyl Phthalate (.38 kg/d), a plasticizer, and Trichloroethylene (3 kg/d), a de-greasing solvent, also exceeded an arbitrary NRTC cutoff level of 0.227 kg/d.
- A Ministry Control Order which expired in September, 1983, required the installation of effluent controls consisting of north and south filtration plants with recycling, oil-water separators and a solidification plant for acid/alkaline liquid waste streams.
- Discharge monitoring results indicate a substantial reduction in heavy metals from NRTC levels has been achieved with institution of these controls.

STATUS:

- Recent analyses show control of heavy metals to levels which meet MOE objectives. However, these still exceed the arbitrary NRTC cutoff levels.
- Chromium and nickel concentrations have been substantially reduced.
- The Ministry and the industry will both continue monitoring to ensure compliance with MOE requirements.
- The Ministry and Atlas are continuing to investigate sources of organics and negotiate control by good housekeeping and maintenance, as well as through process modifications.
- During the 1986 shut down period, Atlas undertook process modifications to the wastewater system to further reduce solids loading to the discharges.

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